

## **REMARKS**

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1, 2, and 4-17 are now pending in this application.

### **Information Disclosure Statement**

Applicant notes that Information Disclosure Statements and PTO/SB/08 forms were submitted on May 4, 2009 and May 27, 2009. However, signed and initialed copies of the PTO/SB/08 forms have not been provided by the Office. Applicant respectfully requests that signed and initialed copies of these PTO/SB/08 forms be provided with the next Office correspondence.

### **Rejection under 35 U.S.C. § 112**

Claims 1, 2, and 4-17 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. This rejection is respectfully traversed.

The Office argues on page 2 of the Office Action that the language “wherein the arcuate piece has in the middle portion a radius of curvature R1 which is greater than a rib height RH of the corrugated rib” of claim 1 is not enabled because this language is not supported by Applicant’s application and because Figure 1 allegedly supports a different arrangement. Applicant respectfully disagrees.

Firstly, the Office has not set forth a proper rejection for a lack of enablement because the test for enablement is whether the disclosure of an application enables a person skilled in the art to make and use the claimed invention without undue experimentation, not whether

claim language is supported by the disclosure of an application, which the Office here argues. See MPEP § 2164.01. The Office carries an initial burden of establishing a reasonable basis to question the enablement provided for a claimed invention. See MPEP § 2164.04. Applicant respectfully submits that the Office has not carried its initial burden of establishing a reasonable basis for an enablement rejection and that one of ordinary skill in the art would be able to make and use the claimed invention without undue experimentation.

Secondly, the disclosure of Applicant's application does provide support for the language noted by the Office. For example, at least original claim 3 and page 3, lines 11-14, of Applicant's specification provide support for the amendments to claim 1. In fact, page 3, lines 11-13, of Applicant's specification states "[t]he radius of curvature of the arcuate piece is preferably greater in the middle region than a rib height RH of the corrugated rib." In addition, Applicant notes that Figure 1 of Applicant's application provides an exemplary heat exchanger structure that does not solely define the disclosure of Applicant's invention.

For at least the reasons discussed above, reconsideration and withdrawal of this rejection is respectfully requested.

#### **Rejections under 35 U.S.C. § 102**

Claims 1 and 3-6 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,560,425 to Sugawara *et al.* (hereafter "Sugawara"). This rejection is respectfully traversed.

Applicant notes that claim 3 was cancelled by the previous amendment and reply of November 30, 2009. Applicant assumes that this rejection applies to only claims 1 and 4-6.

A claim is anticipated only if each and every feature as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally MPEP § 2131.

Sugawara discloses a heat exchanger H that includes header pipes 1, 2 with flat tubes 5 and fins 7 extending between the header pipes 1, 2. See Sugawara at col. 4, lines 40-60.

Sugawara discloses that the flat tubes 5 are made by shaping a flat sheet material into a U-shaped cross-section and welding flanges 21 of sheet material together, with an inner fin 20 placed within the U-shaped sheet. See Sugawara at col. 4, lines 54-60, and Figure 2.

Sugawara discloses that the inner fin 20 divides a flow path within the flat tube 5 into a plurality of small independent flow paths 12. See Sugawara at col. 5, lines 1-11, and Figure 3.

The Office argues on page 3 of the Office Action that the inner fin 20 forms a corrugated rib having at least two rib surfaces which are arranged essentially parallel to one another and are connected by an arcuate piece joined to a flat tube, wherein the arcuate piece has a lower curvature in a middle portion than in a first outer portion and in a second outer portion, wherein the arcuate piece has in the middle portion a radius of curvature  $R1$  which is greater than a rib height  $RH$  of the corrugated rib, as recited in claim 1. In particular, the Office refers to the edge surfaces  $E$  of the inner fin 20 as a middle portion of an arcuate piece and that the surfaces on each side of the edge surfaces  $E$ , one of which is identified by numeral 11 in Figure 3, as rib surfaces which are arranged essentially parallel to one another and connected by the edge surface  $E$ , as recited in claim 1. Applicant respectfully disagrees.

The edge surfaces  $E$ , which are the surfaces in contact with the flat tube 5 in Figure 3, are flat and so are the adjacent surfaces of the inner fin 20, as shown in Figures 3 and 4 of Sugawara. Therefore, the edge surfaces  $E$  cannot be the middle portions of arcuate pieces, as recited in claim 1, because they are flat, not arcuate.

Further, the portions of the inner fin 20 on each side of the edge surface, one of which is identified by numeral 11 in Figure 3, are not essentially parallel to one another, as recited in claim 1, because these surfaces are angled such that these surface extend away from one another in a direction from the top of the flat tube 5 to the bottom of the flat tube 5, as shown in Figure 3 of Sugawara. Nor are these portions of the inner fin 20 connected by an arcuate piece, as recited in claim 1, because the edge surfaces  $E$  of the inner fin 20 are flat, not arcuate.

Alternatively, if the Office is referring to the bends in the inner fin 20, such as the

bends between the top and bottom flat surfaces contacting the flat tube 5 and the angled side surfaces, such as the surface identified by numeral 11 in Figure 3 of Sugawara, Applicant notes that these angled corners are not arcuate pieces that connect rib surfaces that are essentially parallel to one another, as recited in claim 1, because the top and bottom flat surfaces, such as the edge surfaces E, and the angled side surfaces are not essentially parallel to one another. Instead, these surfaces form an obtuse angle, as shown in Figure 3 of Sugawara. Further, Sugawara is silent to the radius of curvature of these corners and any relation between such a radius of curvature and a height of the inner fin 20, as recited in claim 1. Applicant notes that proportions of features in a drawing are not evidence of actual proportions when the drawings are not to scale. See MPEP § 2125. Sugawara does not disclose or suggest that the drawings are drawn to scale. Thus, the drawings of Sugawara cannot be used as evidence of actual proportions.

For at least the reasons discussed above, Sugawara does not anticipate claims 1 and 4-6 because Sugawara does not disclose all of the features of claim 1. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 1 and 3-6 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 2,731,243 to Flurschutz (hereafter "Flurschutz"). This rejection is respectfully traversed.

Applicant notes that claim 3 was cancelled by the previous amendment and reply of November 30, 2009. Applicant assumes that this rejection applies to only claims 1 and 4-6.

Flurschutz discloses a heat exchange apparatus with a pair of plates 10, 12 and sinuously bent wires that form pin-like fins 17 between the plates 10, 12. See Flurschutz at col. 1, lines 15-20; col. 1, line 71, to col. 2, line 12. Flurschutz discloses that the sinuously bent wires form U-shaped loops, as shown in Figures 3, 5, and 9 of Flurschutz. See Flurschutz at col. 2, lines 8-12.

Flurschutz discloses that plates 10, 12 form a passageway 16 in which the sinuously bent wires are located and that passageways 18, 19 are further located between the plates 10, 12 and walls of adjacent air passages. See Flurschutz at col. 1, line 71, to col. 2, line 5. The

apparatus of Flurschutz includes channel members 20 positioned between plates 10, 12 within the passageway 16 and channel members 22 mounted on the outer surfaces of plates 10, 12. See Flurschutz at col. 2, lines 12-24, and Figure 2.

However, Flurschutz does not disclose a heat exchanger comprising, among other things, a soldered heat exchanger network and a corrugated rib having at least two rib surfaces which are arranged essentially parallel to one another and are connected by an arcuate piece joined to a flat tube, wherein the arcuate piece has a lower curvature in a middle portion than in a first outer portion and in a second outer portion, wherein the arcuate piece has in the middle portion a radius of curvature  $R1$  which is greater than a rib height  $RH$  of the corrugated rib, as recited in claim 1. Claims 4-6 depend from claim 1.

The Office argues on pages 5-6 of the Office Action that the pin-like fins 17 serve as corrugated ribs and that bight or yoke portions 14 of the sinuously bent wires serve as an arcuate piece with a middle portion, first outer portion, and a second outer portion. The Office further suggests on page 3 of the Office Action that a radius of curvature of a middle portion of the bight or yoke portions 14 is greater than a rib height of the pin-like fins 17.

However, Flurschutz does not disclose these features and is silent in regard to a relationship between a radius of curvature of a middle portion an arcuate piece and a right height, as recited in claim 1. Applicant notes that proportions of features in a drawing are not evidence of actual proportions when the drawings are not to scale, as in the case of Flurschutz. See MPEP § 2125. Thus, the drawings of Flurschutz cannot be used as evidence of actual proportions.

In addition, the Office argues on page 6 of the Office Action that the sinuously bent wires that form the fins 17 of Flurschutz form an arcuate piece joined to a flat tube, wherein the arcuate piece has a lower curvature in a middle portion than in a first outer portion and in a second outer portion of the arcuate piece, as recited in claim 1, noting Figures 3 and 5 of Flurschutz. Applicant respectfully disagrees.

The arcuate regions of the sinuously bent wires of Flurschutz, which are joined to plates 10 and 12, do not have middle portions with a lower curvature than first and second

outer portions of the arcuate regions, as recited in claim 1. In fact, the wires shown in Figures 3, 5, and 9 of Flurschutz have constant, uniform curvatures throughout any arcuate portions joined to the plates 10, 12. Any middle portion of an arcuate region of a wire that is joined to the plates 10, 12 of Flurschutz has the same curvature as any outer region flanking the middle portion of that wire, as shown in Figures 3, 5, and 9 of Flurschutz. Nor does any middle portion of an arcuate region where the wires of Flurschutz are joined to the plates 10, 12 have a lower curvature than first and second outer regions of the arcuate region, as recited in claim 1.

For at least the reasons discussed above, Flurschutz does not anticipate claims 1 and 4-6 because Flurschutz does not disclose all of the features of claim 1. Applicant respectfully requests reconsideration and withdrawal of this rejection.

**Rejections under 35 U.S.C. § 103**

Claims 2 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugawara as applied to claim 1, and further in view of U.S. Patent No. 3,724,538 to Yamaguchi *et al.* (hereafter “Yamaguchi”). This rejection is respectfully traversed. Yamaguchi fails to remedy the deficiencies of Sugawara discussed above in regard to independent claim 1, from which claims 2 and 17 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugawara as applied to claim 1, and further in view of U.S. Patent No. 6,308,527 to Kuroyanagi *et al.* (hereafter “Kuroyanagi”). This rejection is respectfully traversed. Kuroyanagi fails to remedy the deficiencies of Sugawara discussed above in regard to independent claim 1, from which claim 8 depends. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 2 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flurschutz as applied to claim 1, and further in view of Yamaguchi. This rejection is respectfully traversed. Yamaguchi fails to remedy the deficiencies of Flurschutz discussed

above in regard to independent claim 1, from which claims 2 and 17 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Flurschutz as applied to claim 1, and further in view Kuroyanagi. This rejection is respectfully traversed. Kuroyanagi fails to remedy the deficiencies of Flurschutz discussed above in regard to independent claim 1, from which claim 8 depends. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 9 and 11-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flurschutz as applied to claim 1, and further in view of U.S. Patent No. 7,231,965 to Shimoya *et al.* (hereafter “Shimoya”). This rejection is respectfully traversed. Shimoya fails to remedy the deficiencies of Flurschutz discussed above in regard to independent claim 1, from which claims 9 and 11-16 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Flurschutz in view of Shimoya and U.S. Patent No. 6,805,193 to Hu *et al.* (hereafter “Hu”). This rejection is respectfully traversed. Shimoya and Hu fail to remedy the deficiencies of Flurschutz discussed above in regard to independent claim 1, from which claim 7 depends. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Flurschutz Kuroyanagi and Shimoya. This rejection is respectfully traversed. Kuroyanagi and Shimoya fail to remedy the deficiencies of Flurschutz discussed above in regard to independent claim 1, from which claim 10 depends. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Flurschutz as applied to claim 1, and further in view of U.S. Patent No. 5,361,829 to Kreutzer *et al.* (hereafter “Kreutzer”). This rejection is respectfully traversed. Kreutzer fails to remedy the deficiencies of Flurschutz discussed above in regard to independent claim 1, from which claim 12 depends. Reconsideration and withdrawal of this rejection is respectfully requested.

**Office's Response to Arguments**

The Office states on page 11 of the Office Action that Applicant's arguments, provided with the reply of November 30, 2009, were considered but were rendered moot by new grounds of rejection. Applicant respectfully disagrees because some of the rejections noted above were the same as those of the previous Office Action.

For example, the Office rejected claims 1 and 3-6 under 35 U.S.C. § 102(b) over Flurschutz in both the Office Action mailed July 29, 2009 and the current Office Action. Thus, the rejection of claims 1 and 3-6 over Flurschutz in the current Office Action is not a new grounds of rejection. However, the Office has not provided any response to Applicant's previous reply to this rejection. As a result, Applicant respectfully submits that the current Office Action is incomplete and respectfully submits that if another rejection is made that the rejection be made Non-final because the Office has not responded to Applicant's arguments and fully stated the Office's position relative to the claims.

**Conclusion**

Applicant submits that the present application as amended is now in condition for allowance. Favorable reconsideration of the application is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

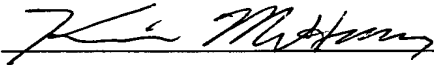
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith,



Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 3/17/10

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